

## TECHNICAL BASIS FOR TIER I OPERATING PERMIT

**DATE:** December 10, 2002

**PERMIT WRITER:** Zach Klotovich

**PERMIT COORDINATOR:** Bill Rogers

**SUBJECT:** AIRS Facility No. 005-00004, Ash Grove Cement Co., Inkom  
Final Tier I Operating Permit  
Project No. T1-9508-132-1

<b>Permittee:</b>	Ash Grove Cement Co.
<b>Permit Number:</b>	005-00004
<b>Air Quality Control Region:</b>	61
<b>AIRS Facility Classification:</b>	A
<b>Standard Industrial Classification:</b>	3241
<b>Zone:</b>	12
<b>UTM Coordinates:</b>	397.6, 4738.6
<b>Facility Mailing Address:</b>	230 Cement Road, Inkom, Idaho
<b>County:</b>	Bannock
<b>Facility Contact Name and Title:</b>	Craig Puljan, Plant Manager
<b>Contact Name Phone Number:</b>	(208) 775-3351, ext. 12
<b>Responsible Official Name and Title:</b>	Craig Puljan, Plant Manager
<b>Exact Plant Location:</b>	Township 7S, Range 36, Section 28
<b>General Nature of Business &amp; Kinds of Products:</b>	Portland cement manufacture

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## ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

ACFM	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AGC	Ash Grove Cement
AIRS	Aerometric Information Retrieval System
AP-42	Compilation of Air Pollutant Emissions Factors, Fifth Edition, January 1995, Office of Air Quality Planning and Standards, EPA
AQCR	Air Quality Control Region
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CKD	cement kiln dust
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
dscfm	dry standard cubic feet per minute
EF	emissions factors
EPA	U.S. Environmental Protection Agency
ESP	electrostatic processor
gr	grain (1 lb = 7,000 grains)
HAPS	hazardous air pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound(s) per hour
LPG	liquefied petroleum gas
MACT	Maximum Available Control Technology
MgO	magnesium oxide
MMBtu	million British thermal units
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NO <sub>x</sub>	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM <sub>10</sub>	particulate matter with an aerodynamic diameter less than or equal to 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO <sub>2</sub>	sulfur dioxide
VOC	volatile organic compound

## **PUBLIC COMMENT / AFFECTED STATES / EPA REVIEW SUMMARY**

A 30-day public comment period for the Ash Grove Cement Company proposed Tier I operating permit was held from August 21 to September 20, 2002 in accordance with IDAPA 58.01.01.364, *Rules for the Control of Air Pollution in Idaho*.

IDAPA 58.01.01.008.01, defines *affected states* as: "All states: whose air quality may be affected by the emissions of the Tier I source and that are contiguous to Idaho; or that are within fifty (50) miles of the Tier I source."

A review of the site location information included in the permit application indicates that the facility is not located within 50 miles of a state border.

### **Summary of Comments**

Comments were received from the Ash Grove Cement Company on September 20, 2002. Responses to comments are provided in Appendix D of this memorandum.

A hearing was held on September 19, 2002 in Inkom, Idaho. No comments were received at the hearing.

### **Proposed Permit**

A proposed permit was developed based on comments submitted during the public comment period. The proposed permit was then forwarded to the EPA for their review as required by IDAPA 58.01.01.366. The EPA provided no written objection to the permit.

## **1. PURPOSE**

The purpose of this memorandum is to explain the legal and factual basis for this Tier I operating permit in accordance with IDAPA 58.01.01.362.

DEQ staff has reviewed the information provided by Ash Grove Cement Co. (Ash Grove) regarding the operation of the portland cement facility located in Inkom, Idaho. This information was submitted based on the requirements to submit a Tier I operating permit in accordance with IDAPA 58.01.01.300.

## **2. SUMMARY OF EVENTS**

On August 18, 1995, DEQ received the Tier I operating permit application from Ash Grove for their Inkom facility. The application was prepared by Trinity Consultants, the facility's consulting firm. On June 10, 1997, DEQ received an addendum to the application. On August 3, 1999, DEQ received a revision to the Tier I application. On June 19, 2002, DEQ sent the draft permit to the facility for a 10-day review. Comments were received from the facility on July 5, 2002. A 30-day public comment period was held from August 21 to September 20, 2002. A public hearing was held in Inkom on September 19, 2002. A proposed permit was developed based on comments submitted during the public comment period. The proposed permit was forwarded to the EPA on November 8, 2002. The EPA provided no written objection to the permit.

## **3. BASIS OF THE ANALYSIS**

The following documents were relied upon in preparing this memorandum and the Tier I operating permit:

- Tier I operating permit application, received August 18, 1995 and supplemental application materials received on June 10, 1997 and August 3, 1999.
- NESHAP source test received April 27, 2001.
- Compilation of Air Pollutant Emissions Factors, AP-42, Fifth Edition, January 1995, Office of Air Quality Planning and Standards, United States Environmental Protection Agency.
- Guidance developed by the EPA and DEQ.
- Title V permits issued by other jurisdictions.

## **4. FACILITY DESCRIPTION**

### **4.1 GENERAL PROCESS DESCRIPTION**

Ash Grove's Inkom plant is situated along the bank of the Portneuf River approximately 11 miles southeast of Pocatello, Idaho. The Inkom plant is one of eight Ash Grove cement plants operated in North America and is the only cement-producing facility in Idaho. The plant produced its first barrel of cement in 1929 and today produces 275,000 tons of cement annually. Clinker, the primary ingredient of cement, is produced at the plant by two rotary kilns utilizing a wet process. The kilns are rated to produce a total of 835 tons of clinker per day using coal or natural gas as primary fuels and used oil and whole tires as secondary fuels. Each kiln is equipped with a multiclone and a Joy three-stage ESP, which cleans PM from the kiln exhaust gases before they exit the stacks.

## **The Manufacturing Process**

### Quarrying the Raw Materials

The Inkom facility is located adjacent to the quarry from which raw limestone, MgO limestone, clay, and shale are mined.

The raw materials are removed from the bedrock by blasting with explosives, then bulldozing the rock to the quarry floor, and hauling the rock to the jaw crusher. The silica and iron ore are hauled to the plant and stockpiled. These materials are also crushed as needed.

### Crushing

The mined material is usually too large to be used in cement manufacturing at this point, so further processing is required. Material enters a crusher and is screened until the appropriate size is obtained.

### Transporting the Raw Material for Handling and Storage

When the rock reaches the desirable size it is transported by a conveyor belt to storage silos for later use in the cement making process.

### Grinding the Raw Materials

The rock from the silos is measured, then transported to a ball mill by conveyor belts. The material is ground, forming a homogeneous slurry of water and rock.

### Producing the Clinker

The slurry is fed to the back of the kiln, which declines at a 4% slope. In order to form clinker the slurry must be heated to incipient fusion where calcination takes place. To perform the energy intensive task of making clinker, gases flowing counter current to the material flow are heated to an excess of 1650°C (3,000°F) by fossil and used fuels. Currently, the Inkom plant burns used whole tires in the No. 2 kiln, and used oil in both the No. 1 and No. 2 kilns. In the future, the Inkom plant will be permitted to modify the No. 1 kiln to burn tires. This will allow the plant to recycle the energy contained in used light truck and passenger car tires.

The chemically reacting raw materials reach a temperature of approximately 1538°C (2800°F) before exiting the kiln and entering the clinker cooler.

### Cooling the Clinker

The clinker exits the kilns at temperatures of 2000°F. It enters clinker coolers beneath the kiln where the heat is transferred from the clinker to the secondary air that reenters the kiln. All the forced air entering the cooler is utilized in the kiln as primary and secondary air for fuel combustion. The clinker leaves the cooler at around 260°C (500°F).

### Handling and Storing the Clinker

Drag chains, elevators, conveyor belts, and an overhead crane are used to transport the warm clinker from the clinker cooler to the storage piles.

### Grinding the Clinker

The clinker is transported from the storage area to the three finish ball mills where it is ground with gypsum to make cement. Separators are used to return oversized particles back to the mills for additional grinding. The plant can grind 450,000 tons of clinker per year.

### Handling and Storing the Cement

The cement is then pneumatically conveyed to the cement storage silos by F-K pumps that are considered insignificant activities according to IDAPA 58.01.01.317. Upon withdrawal from the silos, the cement is either packaged or shipped bulk to customers.

### Transporting the Byproduct, a Potash Solution

A byproduct from the manufacturing process is a potassium sulfate solution. The product is leached from dust collected from the ESPs, making a potash solution. The potash solution is pumped to two lined evaporating ponds located near the quarry. Fertilizer companies transfer the solution to their trucks for distribution to potato farming customers.

## **4.2 FACILITY CLASSIFICATION**

The facility is classified as a major facility, in accordance with IDAPA 58.01.01.008.10, for Tier I permitting purposes because the facility has the potential to emit  $PM_{10}$  and  $SO_2$  at more than 100 T/yr in addition to  $NO_x$  and CO emissions of more than 1000 T/yr. The Inkom plant is a designated facility as defined in IDAPA 58.01.01.006.27.d., Portland Cement Plant. The facility is also major as defined in IDAPA 58.01.01.006.55; and is subject to PSD permitting requirements because the facility's potential to emit is greater than 100 T/yr.

## **4.3 AREA CLASSIFICATION**

The facility is located within AQCR61 and is located in Bannock County, which is classified as unclassifiable for all federal and state criteria pollutants. There are no Class I areas within 10 km of the facility.

## **4.4 PARTIAL PERMITTING HISTORY**

Ash Grove provided a detailed history of permitting actions up to May 1997 in Attachment E of the application. Additional permitting actions are as follows:

December 8, 1997	A Tier II operating permit was issued to Ash Grove. The permit was part of the $PM_{10}$ SIP for the Pocatello area.
January 29, 1999	A PTC was issued to modify the No. 1 and No. 2 clinker coolers, clinker handling system, and clinker reclaim. The PTC supercedes pages 18-22, 32, and 33 of the Tier II operating permit issued on December 8, 1997.
May 17, 1999	A PTC was issued to add a dust scoop system to the No. 1 kiln.

## **4.5 EMISSIONS DESCRIPTION**

Emissions from Ash Grove's Inkom facility consist primarily of combustion products from the kiln and PM from material handling operations. Appendix B contains a list of allowable emissions from each process.

## **5. REGULATORY ANALYSIS**

### **5.1 FACILITY-WIDE APPLICABLE REQUIREMENTS**

#### **5.1.1 Fugitive Particulate Matter - IDAPA 58.01.01.650-651**

##### **5.1.1.1 Requirement**

Permit Condition 2.1 states that all reasonable precautions shall be taken to prevent PM from becoming airborne in accordance with IDAPA 58.01.01.650-651.

##### **5.1.1.2 Compliance Demonstration**

Permit Condition 2.2 states that the permittee is required to monitor and maintain records of the frequency and the methods used by the facility to reasonably control fugitive particulate emissions. IDAPA 58.01.01.651 gives some examples of ways to reasonably control fugitive emissions (e.g., using water or chemicals, applying dust suppressants, using control equipment, covering trucks, paving roads or parking areas, and removing materials from streets).

Permit Condition 2.3 requires that the permittee maintain a record of all fugitive dust complaints received. In addition, the permittee is required to take appropriate corrective action as expeditiously as practicable after a valid complaint is received. The permittee is also required to maintain records that include the date that each complaint was received and a description of the complaint, the permittee's assessment of the validity of the complaint, any corrective action taken, and the date the corrective action was taken.

To ensure that the methods being used by the permittee to reasonably control fugitive PM emissions whether or not a complaint is received, Permit Condition 2.4 requires that the permittee conduct periodic inspections of the facility. The permittee is required to inspect potential sources of fugitive emissions during daylight hours and under normal operating conditions. If the permittee determines that the fugitive emissions are not being reasonably controlled the permittee shall take corrective action as expeditiously as practicable. The permittee is also required to maintain records of the results of each fugitive emissions inspection.

Permit Conditions 2.3 and 2.4 both require the permittee to take corrective action as expeditiously as practicable. In general, DEQ believes that taking corrective action within 24 hours of receiving a valid complaint or determining that fugitive particulate emissions are not being reasonably controlled meets the intent of this requirement. However, it is understood that, depending on the circumstances, immediate action or a longer time period may be necessary.

#### **5.1.2 Control of Odors - IDAPA 58.01.01.775-776**

##### **5.1.2.1 Requirement**

Permit Condition 2.5 and IDAPA 58.01.01.776 both state: *"No person shall allow, suffer, cause or permit the emissions of odorous gases, liquids or solids to the atmosphere in such quantities as to cause air pollution."* This condition is currently considered federally enforceable until such time it is removed from the SIP, at which time it will be a state-only enforceable requirement.

##### **5.1.2.2 Compliance Demonstration**

Permit Condition 2.6 requires the permittee to maintain records of all odor complaints received. If the complaint has merit, the permittee is required to take appropriate corrective action as expeditiously as practicable. The records are required to contain the date that each complaint was received and a description of the complaint, the permittee's assessment of the validity of the complaint, any corrective action taken, and the date the corrective action was taken.



Permit Condition 2.6 requires the permittee to take corrective action as expeditiously as practicable. In general, DEQ believes that taking corrective action within 24 hours of receiving a valid odor complaint meets the intent of this requirement. However, it is understood that, depending on the circumstances, immediate action or a longer time period may be necessary.

### **5.1.3 Visible Emissions - IDAPA 58.01.01.625**

#### **5.1.3.1 Requirement**

IDAPA 58.01.01.625 and Facility-wide condition 2.7 state: *"No person shall discharge any air pollutant to the atmosphere from any point of emissions for a period or periods aggregating no more than three minutes in any 60-minute period which is greater than 20% opacity as determined . . ."*. This provision does not apply when the presence of uncombined water, NO<sub>x</sub>, and/or chlorine gas is the only reason for the failure of the emissions to comply with the requirements of this rule.

#### **5.1.3.2 Compliance Demonstration**

To ensure reasonable compliance with the visible emissions rule, Permit Condition 2.8 requires that the permittee conduct routine visible emissions inspections of the facility. The permittee is required to inspect potential sources of visible emissions during daylight hours and under normal operating conditions. The visible emissions inspection consists of a see/no see evaluation for each potential source of visible emissions. If any visible emissions are present from any point of emissions covered by this section, the permittee must either take appropriate corrective action as expeditiously as practicable, or perform a Method 9 opacity test in accordance with the procedures outlined in IDAPA 58.01.01.625. A minimum of 30 observations shall be recorded when conducting the opacity test. If opacity is determined to be greater than 20% for a period or periods aggregating no more than three minutes in any 60-minute period, the permittee must take corrective action and report the exceedance in its annual compliance certification and in accordance with the excess emissions rules in IDAPA 58.01.01.130-136. The permittee is also required to maintain records of the results of each visible emissions inspection and each opacity test when conducted. These records must include the date of each inspection, a description of the permittee's assessment of the conditions existing at the time visible emissions are present, any corrective action taken in response to the visible emissions, and the date corrective action was taken.

It should be noted that if a specific emissions unit has a specific compliance demonstration method for visible emissions that differs from Permit Condition 2.8, then the specific compliance demonstration method overrides the requirement of Permit Condition 2.8. Permit Condition 2.8 is intended for small sources that would generally not have any visible emissions.

Permit Condition 2.8 requires the permittee to take corrective action as expeditiously as practicable. In general, DEQ believes that taking corrective action within 24 hours of discovering visible emissions meets the intent of this requirement. However, it is understood that, depending on the circumstances, immediate action or a longer time period may be necessary.

### **5.1.4 Startup, Shutdown, Scheduled Maintenance, Safety Measures, Upset and Breakdown - IDAPA 58.01.01.130-136**

#### **5.1.4.1 Requirement**

Permit Condition 2.9 requires that the permittee comply with the requirements of IDAPA 58.01.01.130-136 for startup, shutdown, scheduled maintenance, safety measures, upset, and breakdowns. This section is fairly self-explanatory and no additional detail is necessary in this technical analysis. It should, however, be noted that Subsections 133.02, 133.03, 134.04, and 134.05 are not specifically included in the permit as applicable requirements. These provisions of the *Rules* only apply if the permittee anticipates requesting consideration under Subsection 131.02 of the *Rules* to allow DEQ to determine if an enforcement action to impose penalties is warranted. Section 131.01 states ". . . The owner or operator of

*a facility or emissions unit generating excess emissions shall comply with Sections 131, 132, 133.01, 134.01, 134.02, 134.03, 135, and 136, as applicable. If the owner or operator anticipates requesting consideration under Subsection 131.02, then the owner or operator shall also comply with the applicable provisions of Subsections 133.02, 133.03, 134.04, and 134.05.* Failure to prepare or file procedures pursuant to Sections 133.02 and 134.04 is not a violation of the Rules in and of itself, as stated in Subsections 133.03.a and 134.06.b. Therefore, since the permittee has the option to follow the procedures in Subsections 133.02, 133.03, 134.04, and 134.05; and is not compelled to, the subsections are not considered applicable requirements for the purpose of this permit and are not included as such.

The permittee did submit excess emissions procedures for the kilns, ESPs, and clinker cooler in accordance with Subsection 133.02. The excess emissions procedures can be found in Section H of the application.

#### **5.1.4.2 Compliance Demonstration**

The compliance demonstration is contained within the text of Permit Condition 2.9. No further clarification is necessary here.

#### **5.1.5 Reports and Certifications**

All periodic reports and certifications required by this permit shall be submitted within 30 days of the end of each specified reporting period to the Department. Reports, certifications, and notifications shall be submitted to the appropriate DEQ Pocatello regional office. Periodic compliance certifications required by the permit shall be submitted to EPA Region 10 within 30 days of the end of the specified reporting period.

#### **5.1.6 Monitoring and Recordkeeping**

The permittee is required to maintain recorded data in an appropriate location for a period of at least five years from the date which the data was generated. Though specific applicable requirements may have shorter record retention times, this requirement subjects the permittee to maintaining all recorded data for a period that will satisfy the shorter minimum record retention times.

#### **5.1.7 Open Burning**

All open burning shall be done in accordance with IDAPA 58.01.01.600-616.

#### **5.1.8 Renovation/Demolition – 40 CFR 61, Subpart M (Asbestos)**

The permittee shall comply with all applicable portions of 40 CFR 61, Subpart M when conducting any renovation or demolition activities at the facility.

#### **5.1.9 Chemical Accident Prevention Provisions – 40 CFR 68**

This facility is not currently subject to the requirements of 40 CFR 68. However, should the facility ever become subject to the requirements of 40 CFR 68, it must comply with the provisions as follows.

Any facility that has more than a threshold quantity of regulated substance in a process, as determined under 40 CFR 68.115, must comply with the requirements of the Chemical Accident Prevention Provisions at 40 CFR 68 no later than the latest of the following dates:

- Three years after the date on which a regulated substance present above a threshold quantity is first listed under 40 CFR 68.130.
- The date on which a regulated substance is first present above a threshold quantity in a process.

#### **5.1.10 Test Methods**

If this permit requires any testing, it shall be conducted in accordance with the procedures in IDAPA 58.01.01.157.

##### **5.1.10.1 Opacity**

The opacity shall be determined by procedures contained in IDAPA 58.01.01.625. For NSPS-affected sources, EPA Reference Method 9 should be used.

##### **5.1.10.2 PM/PM<sub>10</sub>**

EPA Reference Method 5, or a DEQ-approved testing method, shall be used to test PM/PM<sub>10</sub> emissions. The averaging time comes from the EPA Reference Method 5.

##### **5.1.10.3 CO**

EPA Reference Method 10, or a DEQ-approved testing method, shall be used to test CO emissions. The averaging time comes from EPA Reference Method 10.

##### **5.1.10.4 SO<sub>2</sub>, NO<sub>x</sub>, and VOC**

EPA Reference Method 6, or a DEQ-approved testing method, shall be used to test SO<sub>2</sub> emissions. EPA Reference Method 7, or a DEQ-approved testing method, shall be used to test NO<sub>x</sub> emissions. EPA Reference Method 25, or a DEQ-approved testing method, shall be used to test VOC emissions. The averaging time for each pollutant comes from the corresponding EPA Reference Method.

#### **5.1.11 Fuel Sulfur Content – IDAPA 58.01.01.725, 5/1/94 (Permit Condition 2.17)**

##### **5.1.11.1 Applicable Requirement**

According to the permittee's application, distillate fuel oil, residual fuel oil, and coal may be used at the facility.

##### **5.1.11.2 Compliance Demonstration (Permit Condition 2.18)**

The permittee shall maintain supplier verification documenting distillate and residual fuel oil sulfur content and coal sulfur content on an as-received basis. To demonstrate compliance with this standard:

- Distillate fuel oil received shall contain no more than 0.3% sulfur by weight for grade 1 and 0.5% sulfur by weight for grade 2.
- Residual fuel oil received shall contain no more than 1.75% sulfur by weight.
- Coal received shall contain no more than 1% sulfur by weight.

#### **5.1.12 Recycling and Emissions Reductions**

The purpose of 40 CFR 82, Subpart F is to reduce emissions of Class I and Class II refrigerants to the lowest achievable level during the service, maintenance, repair, and disposal of appliances in accordance with section 608 of the Clean Air Act. The requirements under 40 CFR 82 Subpart F apply to any person servicing, maintaining, or repairing appliances except for motor vehicle air conditioners. The subpart also applies to persons disposing of appliances, including motor vehicle air conditioners. In addition, the subpart applies to refrigerant reclaimers, appliance owners, and manufacturers of appliances, and recycling and recovery equipment. Certified contractors perform maintenance on the air conditioning equipment at the Inkom plant.

## **5.2 NSPS AND NESHAPS**

### **5.2.1 NSPS**

The requirements under 40 CFR 60, Subpart F, Standards of Performance for Portland Cement Plants, are applicable to the following affected facilities in portland cement plants that commenced construction or modification after August 17, 1971:

- Kiln
- Clinker Cooler
- Raw Mill System
- Finish Mill System
- Raw Mill Dryer
- Raw Material Storage
- Clinker Storage
- Finished Product Storage
- Conveyor Transfer Points
- Bagging and bulk loading and unloading systems.

The dust scoop system (including Baghouse 11) and the clinker handling system (including Baghouses 1, 2, 3, 4, 5, and 6) are subject to the NSPS because they were constructed or modified in 1999 and 2000. The kilns are exempt from the NSPS in accordance with 40 CFR 63.1356 because they are subject to the provisions of 40 CFR 63 Subpart LLL.

### **5.2.2 NESHAPS**

The requirements of 40 CFR 63 Subpart LLL, National Emissions Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry, apply to Ash Grove's Inkom facility. The Inkom facility is an existing source; and therefore, must demonstrate compliance with the standard by June 14, 2002. On October 14, 1999, DEQ received an initial notification of applicability from Ash Grove. The notification stated the Inkom facility was believed to be an area source of HAPs (not a major source) and that source testing would be conducted to substantiate the determination. Source test results were received by DEQ on April 27, 2001. DEQ did not review the MACT applicability test report submitted by Ash Grove until March 2002, when Idaho received delegation of the NESHAP from the EPA. The test results demonstrated potential emissions of HAPs (specifically benzene) from the facility was 50 T/yr at the allowable tire feed. This meant that the Inkom facility would be a major source. DEQ notified Ash Grove of the determination in a letter dated May 3, 2002. On May 15, 2002, DEQ received a letter from Ash Grove requesting a lower limit on the tire feed rate so that potential total organic HAP emissions (which includes benzene) would be limited to 9.9 T/yr. The organic HAP limit and related tire feed limit (500 lb/hr of tires in each kiln) was included in a consent order dated June 20, 2002. With those limits in place, DEQ has determined that the Inkom facility is an area source.

The only affected source at an existing area source is the kiln. Both kilns No. 1 and No. 2 are affected sources and the requirements of the NESHAP are addressed in Section 6.8 of this technical memorandum.

40 CFR Subpart LLL was promulgated on June 14, 1999. A direct final action on amendments to the subpart was issued on April 5, 2002 and becomes effective on July 5, 2002. The amendments are included in this permit.

## **6. EMISSIONS UNITS**

### **6.1 DRILLING, BLASTING, AND DOZING**

#### **6.1.1 Equipment Specifications**

- Drill

Manufacturer:	Gardner Denver
Model:	RDC16B
Serial number:	SN16C1261

- Dozers

#### **6.1.2 Permit Limits/Standard Summary (Permit Condition 3.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.

#### **6.1.3 Compliance Demonstration**

The limestone annual process rate shall not exceed 435,708 T/yr. According to DEQ's December 8, 1997 technical analysis: "annual emissions estimates assume that the total number of blasts per year, six, will yield 435,708 tons of raw material." "Annual emissions estimates were determined by multiplying the pound per blast by the number of blasts per year and dividing the product by 2,000 lbs/ton."

Engineering calculations were used to determine that Ash Grove should be in compliance with the emissions limits so long as they do not exceed the throughput limits. Calculated emissions were provided by Ash Grove (Prop-ei-rev4.xls) as part of the 1997 Tier II modification application. DEQ modified the spreadsheet as part of the 1997 permitting action (DEQPROP1.xls); it is provided in Appendix A. Emissions factors are from AP-42, except for blasting, and are in units of pounds per ton of material handled. According to DEQ's December 8, 1997, technical analysis: "AGC and DEQ concurred that current AP-42 EFs did not accurately represent blasting emissions. AGC and DEQ agreed that DEQ would use data contained in a May 10, 1995, letter submitted by AGC to estimate those emissions."

The following compliance demonstration method was provided by Ash Grove in their comments on the draft permit:

AP-42 Section 11.9 "Western Surface Coal Mining" reports the following emission calculation for blasting of overburden. Overburden in the coal industry is that material that is not suitable for sale as coal and is typically composed of varying percentages of rock and dirt. It is not dissimilar to the quarried limestone at Ash Grove Cement's Inkom, Idaho, Portland cement manufacturing facility except that the quarried limestone may have less silt than overburden. In order to determine TSP and PM<sub>10</sub> emissions from our blasting activities the blasting calculation in AP-42 Section 11.9 was utilized. The TSP calculation is as follows. PM<sub>10</sub> can be determined by taking 52% of the TSP value.

$$\text{TSP} = 0.000014 \cdot A^{1.5} \text{ lbs. TSP/Blast}^{(1)}$$

A = Blasted area in ft<sup>2</sup>

Ash Grove's Tier I permit states that 435,078 tons/yr of limestone can be blasted. Applying the above calculation to the entire permitted quantity of rock yields the following:

$$435,078 \text{ tons} * 0.46 \text{ yd}^3/\text{ton} * 27 \text{ ft}^3/\text{yd}^3 = 5,403,669 \text{ ft}^3 \text{ of limestone blasted}$$

The depth of the limestone drilled is 40 ft. Applying this yields the following:

$$5,403,669 \text{ ft}^3 / 40 \text{ ft} = 135,092 \text{ ft}^2 \text{ of limestone blasted}$$

This is the total area of limestone that can be blasted under the current Tier I operating permit whether it is done in one blast, two blasts, or 100 blasts. Inserting this area value of blasted limestone into the TSP calculation yields the total tons of TSP that can be generated from Ash Grove's blasting operation.

$$\begin{aligned} \text{TSP} &= 0.000014 * (135,092)^{1.5} = 695 \text{ lbs./yr} = 0.348 \text{ t/yr} \\ \text{PM}_{10} &= 695 * 0.52 = 361 \text{ lbs/yr.} = 0.181 \text{ t/yr} \end{aligned}$$

These numbers are well below those stated in the Tier I permit (including drilling and dozing activities) and are independent of the number of blasts made. Since our total blasted tons is fixed by permit, as the number of blasts increases the area footage of each blast decreases such that the overall emissions remain the same.

(1) AP-42 SECTION 11.9 WESTERN SURFACE COAL MINING, EPA, 5<sup>TH</sup> EDITION, VOLUME 1, CHAPTER 11, MINERAL PRODUCTS INDUSTRY

#### **6.1.4 Reporting**

The permittee must submit reports of all required monitoring data at least every six months in accordance with General Provision 24.

### **6.2 QUARRIED RAW MATERIALS RECEIVING, CRUSHING, AND STORAGE**

#### **6.2.1 Emissions Unit/Source Identification**

##### **6.2.1.1 Control Description**

A building open at one end controls emissions associated with the transport of limestone, clay, and shale from the front-end loader to the feeder. Emissions associated with the transport of the raw materials from the No. 1 inclined belt to the No. 2 inclined belt are controlled by a shed covering the transfer point. All transfer points after the jaw crusher are controlled by water spray, or by moisture retained by the raw materials from the water spray, or residual moisture inherent in the rock. Emissions associated with the following transfer points are controlled by an enclosure:

- Feeder to Jaw Crusher
- Jaw Crusher to Inclined Belt
- No. 2 Inclined Belt to Screen No. 1
- Screen No. 1 to Cross Country Belt
- Screen No. 1 to Hammermill

- Hammermill to No. 1 Inclined Belt
- Belt C to Silos

#### 6.2.1.2 Equipment Specifications

- Front-end Loader
- Feeder (Feed Pad)
- Jaw Crusher

Manufacturer:	Kue Ken
Model:	Model 160
Serial number:	Serial No. 16016407

- No. 1 Inclined Belt
- No. 2 Inclined Belt
- No. 1 Screen

Manufacturer:	Link Belt
Model:	Model CA53
Serial number:	Serial No. CA25125

- Hammermill

Manufacturer:	Pennsylvania
Model:	Model CB 1144
Serial number:	Serial No. 2460

- Cross Country Belt
- Belt B
- Belt C
- Discharge Chute

#### 6.2.2 Permit Limits/Standard Summary (Permit Condition 4.1)

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.

#### 6.2.3 Compliance Demonstration

The process rate shall not exceed 200 tons of limestone, clay, and shale per hour on a monthly average basis. The annual process rate shall not exceed 435,708 tons of limestone, clay, and shale per year. Compliance with the process rate limits will demonstrate compliance with the emissions limits according to engineering calculations (see Appendix A). Monitored parameters will be recorded in the Daily Environmental Report (see Appendix D of the permit).

The following was taken from DEQ's December 8, 1997 technical analysis.

"Short-term and annual operating limits for Limestone Receiving, Crushing, and Storage were determined using the throughput rates of source code F24. This emissions point represents transfer to stockpile only. Raw material throughput of this process area is as high as 544,635 tons/yr. Demonstration of compliance with the monthly-based hourly operating limit shall be determined by dividing the total monthly throughput by actual hours of operation. Compliance with similar short-term operating limits in Iron Ore, Silica, and Gypsum Receiving, Crushing, and Storage should be determined in a similar manner."

#### **6.2.4 Permit Limits/Standard Summary (Permit Condition 4.2)**

The process weight standard for existing equipment (IDAPA 58.01.01.702) is applicable to the quarried raw materials' receiving, crushing, and storage process.

#### **6.2.5 Compliance Demonstration**

The permittee is not required to monitor or record any operational parameters to demonstrate compliance with the process weight limit. According to the calculations provided in Appendix C, the pound per hour permit limit is more stringent than the process weight standard. Therefore, demonstrating compliance with Permit Condition 4.1 will ensure compliance with Permit Condition 4.2.

### **6.3 IRON ORE RECEIVING, CRUSHING, AND STORAGE**

#### **6.3.1 Emissions Unit/Source Identification**

##### **6.3.1.1 Control Description**

A building, open at one end, controls emissions associated with the transport of iron ore from the front-end loader to the feeder. Emissions associated with the transport of iron ore from the No. 1 inclined belt to the No. 2 inclined belt are controlled by a partially enclosed shed covering the transfer point. All transfer points after the jaw crusher are controlled by water spray, or by moisture retained by the iron ore from the water spray, or residual moisture inherent in the rock. Emissions associated with the following transfer points are controlled by an enclosure:

- Feeder to Jaw Crusher
- Jaw Crusher to Inclined Belt
- No. 2 Inclined Belt to Screen No. 1
- Screen No. 1 to Cross Country Belt
- Screen No. 1 to Hammermill
- Hammermill to No. 1 Inclined Belt
- Belt C to Silos

##### **6.3.1.2 Equipment Specification**

The equipment specifications are the same as those listed in Section 6.2.1.2 above (Quarried Raw Materials, Crushing, Receiving, and Storage).

#### **6.3.2 Permit Limits/Standard Summary (Permit Condition 5.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.



### **6.3.3 Compliance Demonstration**

According to the emissions calculations contained in Appendix A of the technical analysis, the permittee will be in compliance with the emissions limits in Permit Conditions 5.1 and 5.2 as long as they do not exceed the process rate limits in Permit Condition 5.3.

Compliance with the hourly process limit should be determined by dividing the total monthly throughput by the actual hours of operation for that month. Monitored parameters will be recorded in the Daily Environmental Report (see Appendix D of the permit).

### **6.3.4 Permit Limits/Standard Summary (Permit Condition 5.2)**

The process weight standard for existing equipment (IDAPA 58.01.01.702) is applicable to the iron ore receiving, crushing, and storage process.

### **6.3.5 Compliance Demonstration**

The permittee is not required to monitor or record any operational parameters to demonstrate compliance with the process weight limit. According to the calculations provided in Appendix C, the pound per hour permit limit is more stringent than the process weight standard. Therefore, demonstrating compliance with Permit Condition 5.1 will ensure compliance with Permit Condition 5.2.

### **6.3.6 Permit Limits/Standard Summary (Permit Condition 5.3)**

The *Standards of Performance for Portland Cement Plants* (40 CFR 60, Subpart F) apply to the conveyor transfer points that are part of the iron ore receiving, crushing, and storage emissions unit. As Ash Grove acknowledges in the Tier II modification application received August 15, 2001, the opacity limit from the transfer points is 10%.

### **6.3.7 Compliance Demonstration**

The permittee shall monitor opacity in accordance with Permit Condition 2.8.

## **6.4 SILICA RECEIVING, CRUSHING, AND STORAGE**

### **6.4.1 Emissions Unit/Source Identification**

#### **6.4.1.1 Control Description**

A building, which is open at one end, controls emissions associated with the transport of silica from the front-end loader to the feeder. Emissions associated with the transport of silica from the No. 1 inclined belt to the No. 2 inclined belt are controlled by a shed covering the transfer point. All transfer points after the jaw crusher are controlled by water spray, or by moisture retained by the silica from the water spray, or residual moisture inherent in the rock. Emissions associated with the following transfer points are controlled by an enclosure:

- Feeder to Jaw Crusher
- Jaw Crusher to No. 1 Inclined Belt
- No. 1 Inclined Belt to No. 2 Inclined Belt
- No. 2 Inclined Belt to No. 3 Inclined Belt
- No. 3 Inclined Belt to Screen No. 2

- Screen No. 2 to Cross Country Belt
- Screen No. 2 to Cone Crusher
- Cone Crusher to No. 4 Inclined Belt
- No. 4 Inclined Belt to No. 2 Inclined Belt
- Belt C to Silos

The following transfer points are controlled only by moisture retained by the silica from the water spray or residual moisture inherent in the rock:

- Cross Country Belt to Belt B
- Belt B to Belt C
- Cross Country Belt to Discharge Chute
- Discharge Chute to Ground

#### **6.4.1.2 Equipment Specifications**

The equipment specifications are the same as those listed in Section 6.2.1.2 above, except that the following equipment shall be used instead of the No. 1 screen and hammermill:

- 1 - No. 3 Inclined Belt
- 2 - No. 4 Inclined Belt
- 3 - No. 2 Silica Screen

Manufacturer:	Hewitt Robins
Model:	MS - 9
Serial number:	1120

- Cone Crusher

Manufacturer:	Telesmith
Model:	48S Shop 8504

#### **6.4.2 Permit Limits/Standard Summary (Permit Condition 6.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.

#### **6.4.3 Compliance Demonstration**

Compliance with the pound per hour and tons per year emissions limits is demonstrated by complying with the following process limits.

The process rate shall not exceed 96 tons of silica per hour on an average monthly basis. The annual process rate shall not exceed 43,571 tons of silica per year.

Appendix A of the technical analysis includes a spreadsheet demonstrating compliance with the emissions limits at the process rates. Compliance with the hourly process limit should be determined by dividing the

total monthly throughput by the actual hours of operation for that month. Monitored parameters will be recorded in the Daily Environmental Report (Appendix D of the permit).

#### **6.4.4 Permit Limits/Standard Summary (Permit Condition 6.2)**

The process weight standard for existing equipment (IDAPA 58.01.01.702) is applicable to the silica receiving, crushing, and storage process.

#### **6.4.5 Compliance Demonstration**

The permittee is not required to monitor or record any operational parameters to demonstrate compliance with the process weight limit. According to the calculations provided in Appendix C, the pound per hour permit limit is more stringent than the process weight standard. Therefore, demonstrating compliance with Permit Condition 6.1 will ensure compliance with Permit Condition 6.2.

### **6.5 GYPSUM RECEIVING, CRUSHING, AND STORAGE**

#### **6.5.1 Emissions Unit/Source Identification**

##### **6.5.1.1 Control Description**

A building, which is open at one end, controls emissions associated with the transport of gypsum from the front-end loader to the feeder. Emissions associated with the transport of gypsum from the No. 1 inclined belt to the No. 2 inclined belt are controlled by a shed covering the transfer point. All transfer points after the jaw crusher are controlled by water spray, or by moisture retained by the gypsum from the water spray, or residual moisture inherent in the rock. Emissions associated with the following transfer points are controlled by an enclosure:

- Feeder to Jaw Crusher
- Jaw Crusher to No. 1 Inclined Belt
- No. 1 Inclined Belt to No. 2 Inclined Belt
- No. 2 Inclined Belt to Screen No. 1
- Screen No. 1 to Cross Country Belt
- Screen No. 1 to Hammermill
- Hammermill to No. 1 Inclined Belt
- Belt C to Silos

##### **6.5.1.2 Equipment Specifications**

The equipment specifications are the same as those listed in Section 6.2.1.2 above with the addition of the following:

- 1 - Gypsum Belt
- 2 - Gypsum Bin
- 3 - Overhead Crane

#### **6.5.2 Permit Limits/Standard Summary (Permit Condition 7.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.

#### **6.5.3 Compliance Demonstration**

Compliance with the pound per hour and ton per year emissions limits is demonstrated by complying with the following process limits.

The process rate shall not exceed 200 tons of gypsum per hour on an average monthly basis. The annual process rate shall not exceed 22,737 tons of gypsum per year.

Appendix A of the technical analysis includes a spreadsheet demonstrating compliance with the emissions limits at the allowable process rates. Compliance with the hourly process limit should be determined by dividing the total monthly throughput by the actual hours of operation for that month. Monitored parameters will be recorded in the Daily Environmental Report (see Section J of the application).

#### **6.5.4 Permit Limits/Standard Summary (Permit Condition 7.2)**

The process weight standard for existing equipment (IDAPA 58.01.01.702) is applicable to the gypsum receiving, crushing, and storage process.

#### **6.5.5 Compliance Demonstration**

The permittee is not required to monitor or record any operational parameters to demonstrate compliance with the process weight limit. According to the calculations provided in Appendix C, the pound per hour permit limit is more stringent than the process weight standard. Therefore, demonstrating compliance with Permit Condition 7.1 will ensure compliance with Permit Condition 7.2.

### **6.6 STORAGE PILES**

#### **6.6.1 Emissions Unit/Source Identification**

##### **6.6.1.1 Control Description**

Emissions from the limestone (high and low), gypsum, iron ore, coal, silica, and cement kiln dust storage piles are uncontrolled.

#### **6.6.2 Permit Limits/Standard Summary (Permit Condition 8.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.

#### **6.6.3 Monitoring & Recordkeeping Requirements**

Compliance with the pound per hour and ton per year emissions limits is demonstrated by complying with the storage pile area and throughput limits. Appendix A of the technical analysis includes a spreadsheet demonstrating compliance with the emissions limits at the allowable process limits. The permittee must monitor the storage pile area and throughput rates to ensure they do not exceed the numbers used in the compliance calculation.

## **6.7 SILO WITHDRAWAL, CONVEYING, AND STORAGE**

### **6.7.1 Emissions Unit/Source Identification**

#### **6.7.1.2 Control Description**

Emissions associated with the transfer of limestone, silica, and iron ore from silo storage to the raw mill are controlled by being enclosed in a building. Emissions associated with processing limestone, silica, and iron ore are controlled by the water used in the process.

#### **6.7.1.3 Equipment Specifications**

- Silo Feeder
- Feed Belt
- Mill No. 4 (Raw Mill)
- Mill No. 3 (Auxiliary Raw Mill)

### **6.7.2 Permit Limits/Standard Summary (Permit Condition 9.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.

### **6.7.3 Monitoring & Recordkeeping Requirements**

Compliance with the pound per hour and tons per year emissions limits is demonstrated by complying with the raw material throughput limits. Appendix A of the technical analysis includes a spreadsheet demonstrating compliance with the emissions limits at the process limits. According to the 1997 technical analysis, the throughput limits were based on source code F30.

Operating requirements for silo withdrawal, conveying, and storage were taken from the short-term and annual throughput rates of source code F30. The emissions point associated with the source code number is the point at which all materials pass through, and thus has the highest short-term and annual throughput rate. Demonstration of compliance with the monthly-based hourly operating limit shall be determined by dividing the total monthly throughput by actual operating hours.

The permittee must monitor and record the daily throughput of limestone, silica, and iron ore to ensure they do not exceed the throughput used to calculate emissions. Monitored parameters will be recorded in the Daily Environmental Report (see Appendix D of the permit).

### **6.7.4 Permit Limits/Standard Summary (Permit Condition 9.2)**

The process weight standard for existing equipment (IDAPA 58.01.01.702) is applicable to the silo withdrawal, conveying, and storage process.

### **6.7.5 Compliance Demonstration**

The permittee is not required to monitor or record any operational parameters to demonstrate compliance with the process weight limit. According to the calculations provided in Appendix C, the pound per hour permit limit is more stringent than the process weight standard. Therefore, demonstrating compliance with Permit Condition 7.1 will ensure compliance with Permit Condition 7.2.

## 6.8 NO. 1 AND NO. 2 ROTARY KILNS

### 6.8.1 Emissions Unit/Source Identification

#### 6.8.1.1 Equipment Specifications

- No. 1 Kiln

Manufacturer:	Allis Chalmers
Speed:	0.9 rotations per minute
Rated heat capacity:	7.7 MMBtu/Ton of clinker
Burner type:	Horizontally fired
Kiln diameter:	10.0 feet
Kiln length:	200 feet
Operating temperature (front/back):	3000/700°F

- No. 1 Kiln Multiclone

Manufacturer:	F.L. Smidth
Efficiency:	67.1% for particulates
Pressure drop:	2 inches H <sub>2</sub> O

- No. 1 Kiln ESP

Manufacturer:	Joy Western
Efficiency:	99.8% for particulates
Gas velocity:	41.0 feet per second

- No. 2 Kiln

Manufacturer:	F.L. Smidth
Speed:	1.3 rotations per minute
Rated heat capacity:	6.8 MMBtu/Ton of clinker
Burner type:	Horizontally fired
Kiln diameter:	9.5 feet
Kiln length:	320 feet
Operating temperature (front/back):	3000/440°F

- No. 2 Kiln Multiclone

Manufacturer:	F.L. Smidth
Efficiency:	75.8% for particulates
Pressure drop:	2 inches H <sub>2</sub> O

- No. 2 Kiln ESP

Manufacturer:	Joy Western
Efficiency:	99.4% for particulates
Gas velocity:	42.3 feet per second

#### 6.8.1.2 Stack Specifications

- The No. 1 kiln stack is designed to the following specifications:

Height:	74 feet
Exit dimensions:	7.0 feet by 4.0 feet

Average volumetric flow rate: 69,000 actual cubic feet per minute  
Exit temperature: 400 to 550°F

- The No. 2 Kiln stack is designed to the following specifications:

Height: 74 feet  
Exit dimensions: 7.0 feet by 4.0 feet  
Average volumetric flow rate: 71,000 actual cubic feet per minute  
Exit temperature: 300 to 450°F

#### **6.8.2 Permit Limits/Standard Summary (Permit Condition 10.1.1)**

Permit Condition 10.1.1 contains pound-per-hour and tons-per-year emissions limits for PM, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, VOCs, CO, total Pb, benzo(a)pyrene. These emissions limits come from the Tier II operating permit issued December 8, 1997. Organic HAP emissions limits come from the consent order signed June 10, 2002. The organic HAP emissions limits were put in place to keep the facility an area source under the NESHAPs.

#### **6.8.3 Compliance Demonstration**

The permittee will install and operate CO and NO<sub>x</sub> CEMS to demonstrate compliance with the CO and NO<sub>x</sub> emissions limits. The permittee must monitor and record the operating parameters listed in Permit Conditions 10.5 and 10.6. Monitored parameters will be recorded in the Daily Environmental Report or Kiln Report (see Section J of the application).

The permittee will follow the PM Compliance Demonstration Plan in Appendix C of the permit. The plan requires PM source testing to demonstrate initial compliance with the PM emissions limits. The permittee will conduct annual Method 25A tests to demonstrate compliance with the organic HAP and VOC emissions limits. Total emissions of organic HAPs from the Method 25A are considered one HAP for purposes of demonstrating that the facility is an area source. If the results of the Method 25A test demonstrate that organic HAP emissions could exceed 10 T/yr at the tire feed rate of 500 lb/hr for each kiln, the tire feed rate must be restricted further or the permittee must comply with the major source requirements of the NESHAP (40 CFR 63 Subpart LLL).

The permittee conducted a performance test for metals in April 2001 that demonstrated total metals emissions (including lead) from kiln No. 1 are 0.0034 lb/hr and metals emissions from kiln No. 2 are 0.0014 lb/hr. Therefore the permittee has demonstrated compliance with the lead emissions limits.

The permittee shall demonstrate compliance with the SO<sub>2</sub> and BAP emissions limits by conducting compliance tests within 180 days of issuance of the permit.

Permit Condition 10.5 requires used oil to meet the specifications of 40 CFR 279.11. The specifications, monitoring, and recordkeeping requirements for used oil are contained in Permit Condition 10.10.

#### **6.8.4 Permit Limits/Standard Summary (Permit Condition 10.1.2)**

Both 40 CFR 60.62 and IDAPA 58.01.01.625 limit visible emissions from the kiln to 20% opacity.

#### **6.8.5 Compliance Demonstration**

The NSPS (40 CFR 60.63) requires affected facilities to install and operate continuous opacity monitors. Because the kilns at the Inkom facility are affected sources, Ash Grove is required to install and operate continuous opacity monitors. The Ash Grove kilns do not qualify for exemption from NSPS under the MACT (40 CFR 63.1356). As stated under Section 63.1356(a)(1), kilns, as applicable under 40 CFR 60.60(b), located at area sources are subject to PM and opacity limits and associated reporting and recordkeeping, under 40 CFR 60, Subpart F.

#### **6.8.6 Permit Limits/Standard Summary (Permit Condition 10.2)**

Permit Condition 10.2 limits PM emissions to the amount allowed using the equation in IDAPA 58.01.01.702.

#### **6.8.7 Compliance Demonstration**

The permittee is not required to monitor or record any operational parameters to demonstrate compliance with the process weight limit because the allowable hourly limits contained in the permit are more stringent than the process weight equations. As long as the permittee maintains compliance with the PM limits in Permit Condition 10.1.1 and the process throughput rates, they will be in compliance with the process weight standard.

#### **6.8.8 Permit Limits/Standard Summary (Permit Condition 10.3)**

The emissions standard comes from 40 CFR 63 Subpart LLL (National Emissions Standards for Hazardous Air Pollutants from Portland Cement Plants). The opacity and PM standards in the subpart do not apply to area sources. Therefore, they do not apply to the Inkom facility, which is not a major source of HAPs. See section 5.2.2 for discussion on NESHAP applicability.

#### **6.8.9 Monitoring & Recordkeeping Requirements**

Monitoring and recordkeeping requirements are provided in the standard, and applicable requirements have been included in the permit. Requirements specifically related to opacity, PM, or carbon injection were not included in the permit because they do not apply to the Inkom facility. The requirements under 40 CFR 63 Subpart A are provided in Appendix A of the permit.

#### **6.8.10 Reporting**

The reporting requirements of 40 CFR 63, Subpart A and Subpart LLL are included in the permit at Permit Conditions 10.27 through 10.29.

#### **6.8.11 Permit Limits/Standard Summary (Permit Condition 10.4)**

The emissions standard comes from 40 CFR 60, Subpart F (Standards of Performance for Portland Cement Plants). The kilns were modified in 1997 when the chains inside the kilns heat-exchange system were upgraded.

#### **6.8.12 Monitoring & Recordkeeping Requirements**

Monitoring and recordkeeping requirements are provided in the standard, and applicable requirements have been included in the permit. The requirements under 40 CFR 60, Subpart A are provided in Appendix B of the permit.

#### **6.8.13 Reporting**

The reporting requirements of 40 CFR 60 Subpart A and Subpart F are included in the permit.



## 6.9 NO. 1 AND NO. 2 CLINKER COOLERS AND CLINKER HANDLING SYSTEM

### 6.9.1 Emissions Unit/Source Identifications

- Clinker Cooler No. 1

Manufacturer:	Fuller
Model:	522

- Drag Chain No. 1
- Drag Chain No. 2
- Drag Chain No. 3
- No. 1 Clinker Elevator
- Drag Chain No. 7
- Stacker Belt
- Belt Stacker
- Drag Chain No. 4
- No. 2 Elevator
- Drag Chain No. 5
- Clinker Silo No. 1
- Clinker Silo No. 2
- Clinker Silo No. 3

- Baghouse 1 (BH1)

Manufacturer:	Fabric Air Systems
Model:	121-10
Air-to-cloth ratio:	5.91-1

- Baghouse 2 (BH2)

Manufacturer:	Argo Blower
Model:	5984-C
Air-to-cloth ratio:	4.94-1

- Baghouse 3 (BH3)

Manufacturer:	Farr Tenhay
Model:	8D Mark IV
Efficiency:	99.8% (PM)

#### **6.9.2 Permit Limits/Standard Summary (Permit Condition 11.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits for Baghouses No. 1, 2, and 3 come from Tier II Permit No. 005-00004, issued on December 8, 1997.

#### **6.9.3 Compliance Demonstration**

Appendix A of the technical analysis includes a spreadsheet demonstrating compliance with the emissions limits by using a PM emissions factor of 0.03 gr/dscf.

#### **6.9.4 Permit Limits/Standard Summary (Permit Condition 11.2)**

The only applicable standard from the NSPS (40 CFR 60, Subpart F) is opacity. The particulate emissions rate standards apply only to affected kilns and clinker coolers. An opacity test was conducted in August 2000 and accepted by the Department in a letter dated October 6, 2000. The Department determined that the visible emissions from BH#1, BH#2, BH#3, BH#4, BH#6, #3 reclaim belt to elevator #3, bin belt to bin, #3 elevator to bin belt and stacking belt were in compliance with the respective permitted visible emission limits during the test periods.

#### **6.9.5 Monitoring & Recordkeeping Requirements**

The applicable monitoring and recordkeeping requirements from the NSPS are included in the permit.

#### **6.9.6 Reporting**

No specific reporting requirements are included in Subpart F. Applicable requirements in 40 CFR 60, Subpart A are included in Appendix B of the permit. The permittee must submit reports of all required monitoring data at least every six months in accordance with General Provision 24.

#### **6.9.7 Permit Limits/Standard Summary (Permit Condition 11.3)**

Emissions limits on fugitive emissions of PM and PM<sub>10</sub> come from PTC No. 005-00004, Permit Condition 1.4, issued January 29, 1999.

#### **6.9.8 Compliance Demonstration**

According to engineering calculations, maintaining compliance with the process limits will demonstrate compliance with the fugitive emissions limits. The clinker cooling process is limited to the same throughput rate as the kilns. The calculations are provided in Appendix A.

#### **6.9.9 Permit Limits/Standard Summary (Permit Condition 11.4)**

Permit Condition 11.4 limits PM emissions to the amount allowed using the equation in IDAPA 58.01.01.702.

#### **6.9.10 Compliance Demonstration**

According to the calculations in Appendix C, the process weight rate standard from IDAPA 58.01.01.702 (22.7 lb/hr), when applied to the entire clinker cooler process, is more stringent than the pound per hour fugitive PM limit contained in Permit Condition 11.4 (33.25 lb/hr). However, according to DEQ guidance, the process weight rate standard can be applied to each individual process that handles, stores, or changes product. The calculations in Appendix A demonstrate that the individual processes are in compliance with the process weight standard.

## **6.10 CLINKER RECLAIM**

### **6.10.1 Emissions Unit/Source Identification**

#### **6.10.1.1 Equipment Specifications**

- Clinker Reclaim Belt No. 1
- Clinker Reclaim Belt No. 2
- Clinker Reclaim Belt No. 3
- 4 - No. 3 Elevator
- Clinker Bin Belt
- Baghouse 4 (BH4)

Manufacturer:	Mikro D Pulsair
Model:	36 S8 20
Air-to-cloth ratio:	9.4-1

- Baghouse 5 (BH5)

Manufacturer:	ICA
Model:	2-800AE
Air-to-cloth ratio:	4.0-1

- Baghouse (BH6)

Manufacturer:	Micro D Pulsair
Model:	30-8
Air-to-cloth ratio:	4.13-1

#### **6.10.2 Permit Limits/Standard Summary (Permit Condition 12.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits for Baghouses No. 4, 5, and 6 come from Tier II Permit No. 005-00004, issued on December 8, 1997.

#### **6.10.3 Compliance Demonstration**

Appendix A of the technical analysis includes a spreadsheet demonstrating compliance with the emissions limits by using a PM emissions factor of 0.03 gr/dscf.

#### **6.10.4 Permit Limits/Standard Summary (Permit Condition 12.2)**

Emissions limits on fugitive emissions of PM and PM<sub>10</sub> come from PTC No. 005-00004, Permit Condition 1.2, issued January 29, 1999.

#### **6.10.5 Compliance Demonstration**

According to engineering calculations, maintaining compliance with the process limits will demonstrate compliance with the fugitive emissions limits. The calculations are provided in Appendix A.

#### **6.10.6 Permit Limits/Standard Summary (Permit Condition 12.3)**

The only applicable standard from the NSPS (40 CFR 60, Subpart F) is opacity. The particulate emissions rate standards apply only to affected kilns and clinker coolers.

#### **6.10.7 Monitoring & Recordkeeping Requirements**

The applicable monitoring and recordkeeping requirements from the NSPS are included in the permit. An opacity test was conducted in August 2000 and accepted by the Department in a letter dated October 6, 2000. The Department determined that the visible emissions from BH#1, BH#2, BH#3, BH#4, BH#6, #3 reclaim belt to elevator #3, bin belt to bin, #3 elevator to bin belt and stacking belt were in compliance with the respective permitted visible emission limits during the test periods.

#### **6.10.8 Reporting**

No specific reporting requirements are included in Subpart F. Applicable requirements in 40 CFR 60, Subpart A are included in Appendix B of the permit.

#### **6.10.9 Permit Limits/Standard Summary (Permit Condition 12.4)**

Permit Condition 12.4 limits PM emissions to the amount allowed using the equation in IDAPA 58.01.01.702.

#### **6.10.10 Compliance Demonstration**

According to the calculations in Appendix C, the pound per hour fugitive PM limit contained in Permit Condition 12.2 (0.17 lb/hr), is more stringent than the process weight rate standard from IDAPA 58.01.01.702 (28.2 lb/hr). Therefore, no further compliance demonstration is required for the process weight rate standard.

### **6.11 FINISH GRINDING AND ASSOCIATED HANDLING**

#### **6.11.1 Emissions Unit/Source Identification**

##### **6.11.1.1 Equipment Specifications**

- Mill No. 1
  - Manufacturer: FL Smidth
  - Model: 2411 Unidan
- Mill No. 2
  - Manufacturer: FL Smidth
  - Model: 2411 Unidan
- Separator No. 1
  - Manufacturer: Raymond
  - Model: NC 4534
- Mill No. 3
  - Manufacturer: FL Smidth
  - Model: 2411 Unidan

- Separator No. 1

Manufacturer: Sturtevant  
Model: 14 AS

- Baghouse 7 (BH7)

Manufacturer: BHA  
Type: Pulse-Jet  
Air-to-cloth ratio: 3.0  
Flow rate: 23,800 acfm

- Baghouse 8 (BH8)

Manufacturer: Buell Norblo  
Model: 390AM Series 39  
Air-to-cloth ratio: 1.87  
Efficiency: 95%

- Baghouse 9 (BH9)

Manufacturer: Pangborn  
Model: C 160 CM  
Air-to-cloth ratio: 1.74

#### 6.11.2 Permit Limits/Standard Summary (Permit Condition 13.1)

Baghouses No. 7, 8, and 9 were referred to as Baghouses No. 5, 6, and 7 in the December 8, 1997 operating permit. The baghouse names changed as part of the May 17, 1999 modification to the Kiln No. 1 dust scoop system. According to the December 8, 1997 technical analysis: "It should be noted that this process does have a recycle loop that makes it appear to handle more material than it actually does. Demonstration of compliance with the monthly based hourly operating limit shall be determined by dividing the total monthly throughput by the actual hours of operation."

#### 6.11.3 Compliance Demonstration

According to engineering calculations, maintaining compliance with the process limits will demonstrate compliance with the emissions limits. The calculations are provided in Appendix A.

#### 6.11.4 Permit Limits/Standard Summary (Permit Condition 13.2)

The pound per hour and tons per year fugitive emissions limits are from the 1997 Tier II operating permit.

#### 6.11.5 Compliance Demonstration

According to engineering calculations, maintaining compliance with the process limits will demonstrate compliance with the emissions limits. The calculations are provided in Appendix A.

#### 6.11.6 Permit Limits/Standard Summary (Permit Condition 13.3)

The process weight standard for existing equipment (IDAPA 58.01.01.702) is applicable to the finish grinding process.

### **6.11.7 Compliance Demonstration**

The permittee is not required to monitor or record any operational parameters to demonstrate compliance with the process weight limit because the allowable hourly limits contained in the permit are more stringent than the process weight equations.

The permittee is required to operate the baghouses in accordance with the dust collector maintenance plan.

## **6.12 CEMENT LOADOUT**

### **6.12.1 Emissions Unit/Source Identification**

#### **6.12.1.1 Control Description**

Emissions associated with truck loadouts and truck loading tanks A, B, and C/D and the transfer points within those parameters are controlled by Baghouse No. 10. All other cement activity between the FK pumps and truck loading tanks are controlled by enclosure and Baghouse No. 9.

#### **6.12.1.2 Equipment Specifications**

- Baghouse 9 (For specifications, see Finish Grinding.)
- Baghouse 10

Manufacturer:	Mikro Pulsaire
Model:	Type 30 8
Air-to-cloth ratio:	2.68

#### **6.12.2 Permit Limits/Standard Summary (Permit Condition 14.1)**

Baghouses No. 9 and 10 were referred to as Baghouses No. 7 and 8 in the December 8, 1997 operating permit. The baghouse names changed as part of the May 17, 1999 modification to the Kiln No. 1 dust scoop system.

Baghouse 9 emissions were changed to 2.82, 9.26, 2.4, and 7.87 lbs./hr to be consistent with the January 29, 1999 PTC issued by DEQ. The 1995 Tier II permit application refers to this baghouse as ID # C9. Source description Baghouse #8. Area served Silos/Packaging. In the PTC issued December 8, 1997 this baghouse is still referenced as Source Description Baghouse #8. In the PTC issued January 29, 1999 this dust collectors Source Description was changed to Baghouse #9.

#### **6.12.3 Compliance Demonstration**

Ash Grove must operate and maintain the baghouses in accordance with the dust collector maintenance plan.

#### **6.12.4 Permit Limits/Standard Summary (Permit Condition 14.2)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.

#### **6.12.5 Compliance Demonstration**

According to the emissions calculations contained in Appendix A of the technical analysis, the permittee will be in compliance with the emissions limits in Permit Condition 14.2 as long as they do not exceed the process rate limits in Permit Condition 14.4.

Compliance with the hourly process limit should be determined by dividing the total monthly throughput by the actual hours of operation for that month. Monitored parameters will be recorded in the Daily Environmental Report (see Section J of the application).

#### **6.12.6 Permit Limits/Standard Summary (Permit Condition 14.3)**

The process weight standard for existing equipment (IDAPA 58.01.01.702) is applicable to the cement loadout process.

#### **6.12.7 Compliance Demonstration**

The permittee is not required to monitor or record any operational parameters to demonstrate compliance with the process weight limit because the allowable hourly limits contained in the permit are more stringent than the process weight equations.

The permittee is required to operate the baghouses in accordance with the dust collector maintenance plan.

### **6.13 COAL HANDLING**

#### **6.13.1 Emissions Unit/Source Identification**

##### **6.13.1.1 Equipment Specifications**

- Coal Mill No. 1

Manufacturer:	Raymond
Model:	473

- Coal Mill No. 2

Manufacturer:	Raymond
Model:	423A

#### **6.13.2 Permit Limits/Standard Summary (Permit Condition 15.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.

#### **6.13.3 Compliance Demonstration**

According to engineering calculations, maintaining compliance with the process limits (280 T/hr and 70,000 T/yr of coal processed) will demonstrate compliance with the emissions limits. The calculations are provided in Appendix A.

#### **6.13.4 Permit Limits/Standard Summary (Permit Condition 15.2)**

The process weight standard for existing equipment (IDAPA 58.01.01.702) is applicable to the coal handling process because it was installed prior to 1979.

#### **6.13.5 Compliance Demonstration**

According to the allowable process weight emissions calculations contained in Appendix C, the hourly emissions limit in Permit Condition 15.1 (5.61 lb/hr) is much more stringent than the process weight limit

(39.9 lb/hr). Therefore, the permittee will be in compliance with the IDAPA 58.01.01.702 as long as they maintain compliance with Permit Condition 15.1. No monitoring or recordkeeping is required.

## **6.14 CEMENT KILN DUST HANDLING**

### **6.14.1 Emissions Unit/Source Identification**

#### **6.14.1.1 Control Description**

Emissions associated with the transfer of CKD by the loader to waste storage are uncontrolled. Emissions associated with the transfer of CKD from the No. 2 kiln multiclone to the screw, from the screw to the elevator, and from the elevator to a second screw are controlled by being enclosed. Dust emissions resulting from the transfer of the CKD from the No.1 multiclone elevator, through the screws, and into the bin will be controlled by Baghouse No. 11, which is mounted on top of the 66-ton bin.

#### **6.14.1.2 Equipment Specifications**

- Baghouse No. 11 (BH11)

Manufacturer:	Micro-Pulsaire
Model Number:	Type 30-8
Equipment Number:	50-122-000
Grain Loading:	0.01 gr/dscf (guaranteed)
Flow rate:	940 dscfm

#### **6.14.2 Permit Limits/Standard Summary (Permit Condition 16.1)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from PTC No. 005-00004, issued on May 17, 1999.

#### **6.14.3 Compliance Demonstration**

The permittee is required to maintain the pressure drop across the baghouse within maintenance plan specifications and record the pressure drop once per week. Visible emissions must be monitored daily.

#### **6.14.4 Permit Limits/Standard Summary (Permit Condition 16.2)**

In accordance with 40 CFR 60.62(c): "...the permittee shall not cause to be discharged into the atmosphere from Baghouse No. 11 stack, any new screw conveyors associated with the dust scoop system, and the dust feed spout (bulk loading systems) any gases which exhibit 10% opacity, or greater."

#### **6.14.5 Compliance Demonstration**

The permittee conducted a visible emissions performance test on Baghouse No. 11 on March 17, 2000. DEQ accepted the test on May 2, 2000. The throughput rate during the test was 2.4 T/hr and DEQ's May 2, 2000 review letter indicates that the maximum allowable throughput rate is 2.9 T/hr in accordance with General Provision F of the May 17, 1999 PTC.

#### **6.14.6 Permit Limits/Standard Summary (Permit Condition 16.3)**

The PM and PM<sub>10</sub> hourly and annual emissions limits come from Tier II Permit No. 005-00004, issued on December 8, 1997.



#### **6.14.7 Compliance Demonstration**

According to engineering calculations, maintaining compliance with the process limits will demonstrate compliance with the emissions limits. The calculations are provided in Appendix A.

#### **6.14.8 Permit Limits/Standard Summary (Permit Condition 16.4)**

The process weight standard for existing equipment (IDAPA 58.01.01.702) is applicable to the cement kiln dust handling process.

#### **6.14.9 Compliance Demonstration**

The permittee is not required to monitor or record any operational parameters to demonstrate compliance with the process weight limit because the allowable hourly limits contained in the permit are more stringent than the process weight equations. See the calculations in Appendix C.

The permittee is required to operate the baghouses in accordance with the operation and maintenance manual.

### **6.15 UNPAVED ROADS**

#### **6.15.1 Emissions Unit/Source Identification**

The unpaved road sections are identified in Section D of the application.

#### **6.15.2 Permit Limits/Standard Summary (Permit Condition 17.1)**

Permit Condition 17.1 requires that fugitive emissions are reasonably controlled and limits particulate emissions from unpaved roads to 19.97 lb/hr and 16.58 T/yr PM, and 7.19 lb/hr and 5.97 T/yr PM<sub>10</sub>.

The spreadsheets in Appendix A show that a vehicle speed of 8 miles per hour was used to calculate emissions. Therefore, this was included as a permit requirement.

#### **6.15.3 Compliance Demonstration**

According to engineering calculations, maintaining compliance with the process limits will demonstrate compliance with the emissions limits. The calculations are provided in Appendix A.

### **6.16 PAVED ROADS**

#### **6.16.1 Emissions Unit/Source Identification**

The paved road sections are identified in Section D of the application.

#### **6.16.2 Permit Limits/Standard Summary (Permit Condition 18.1)**

Permit Condition 17.1 requires that fugitive emissions are reasonably controlled and limits particulate emissions from paved roads to 46.52 lb/hr and 16.12 T/yr PM, and 10.01 lb/hr and 3.47 T/yr PM<sub>10</sub>.

The spreadsheets in Appendix A show that a vehicle speed of 8 miles per hour was used to calculate emissions. Therefore, this was included as a permit requirement.

#### **6.16.3 Compliance Demonstration**

According to engineering calculations, maintaining compliance with the process limits will demonstrate compliance with the emissions limits. The calculations are provided in Appendix A.

## 7. INSIGNIFICANT ACTIVITIES

Listed below are the insignificant activities described by the source in accordance with IDAPA 58.01.01.317.

Table 7.1 INSIGNIFICANT ACTIVITIES

Description	Plant Location	Insignificant Activities Section Citation IDAPA 58.01.01.17.01.B.1
Operation of loading and unloading storage tanks	Two aboveground 500 gallon tanks and one 3000 gallon underground tank	(3)
Grinding aid and used oil tanks	Building No. 38 and No. 62	(3)
Operation, unloading, and storage of butane, propane, or LPG	Plant-wide	(4)
Combustion sources less than five MMBtu/hr exclusively using natural gas, butane, propane, and/or LPG	Plant-wide	(5)
Welding	Building No. 30 and throughout plant area	(9)
Cleaning and stripping activities using solutions containing less than 1% VOC by weight	Plant-wide	(26)
Water-based lubricants for metal working where the organic content of the lubricant is less than 10%	Buildings No. 30 and No. 48	(27)

## 8. ALTERNATIVE OPERATING SCENARIOS

No alternative operating scenarios were requested by the permittee.

## 9. TRADING SCENARIOS

No trading scenarios were requested by the permittee.

## 10. COMPLIANCE SCHEDULE

The permittee will submit a Tier II application, as specified in Section 20 of the permit, to resolve outstanding permitting issues. Requirements from the consent order, effective June 10, 2002, are included in the permit.

## 11. ACID RAIN PERMIT

Ash Grove is not subject to the acid rain permitting requirements of 40 CFR 72-75. The facility is not an affected unit according to the definitions and applicability under 72.2 and 72.6. The Ash Grove Cement facility is a non-utility unit (72.6(b)(8)). "Unit" is defined as a fossil fuel-burning device and "utility" is defined as any person that sells electricity.

## 12. AIRS DATABASE

AIRS/AFS FACILITY-WIDE CLASSIFICATION DATA ENTRY FORM

AIR PROGRAM	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
POLLUTANT							
SO <sub>2</sub>	A	A				A	U
NO <sub>x</sub>	A	A				A	U
CO	A	A				A	U
PM <sub>10</sub>	A	A				A	U
PT (Particulate)	A	A	A			A	
VOC	B	B				B	
THAP (Total HAPs)							
			APPLICABLE SUBPART				
			F		LLL		

**AIRS/AFS CLASSIFICATION CODES:**

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant, which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

## 13. REGISTRATION FEES

Ash Grove is a major facility as defined by IDAPA 58.01.01.008.10; therefore, registration and registration fees, in accordance with IDAPA 58.01.01.387, apply.

## 14. RECOMMENDATION

Based on the Tier I application and review of the federal regulations and state rules, staff recommends that DEQ issue final Tier I operating permit No. 005-00004 to Ash Grove Cement Co. in Inkom.

ZQK/sd

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cc: Tiffany Floyd, Pocatello Regional Office  
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